

Climate-resilient agricultural systems in northern Laos: the experience of the EFICAS project

Eco
Friendly
Intensification &
Climate resilient
Agricultural
Systems



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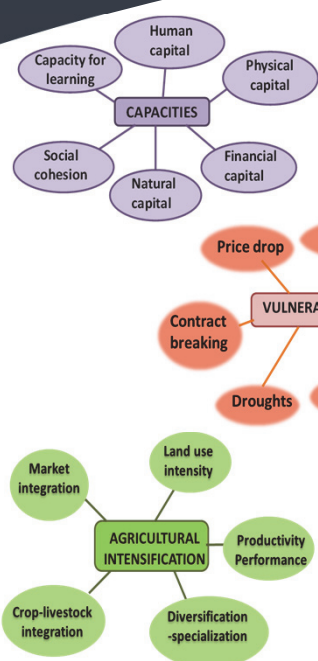
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Assessing farming communities' resilience to climate change

Resilience can be defined as « the capacity of individuals or social groups to accommodate stresses and disturbances, to self-organize, and to learn in order to maintain or improve essential basic structures and ways of functioning » (Speranza et al., 2014). Applying the concept of resilience in the context of the northern Lao uplands led to identify three dimensions of resilience corresponding to three intervention axes:

- 1. Increasing buffer capacity farming communities to better cope with stresses**, with 3 main intervention components: livelihoods (i.e. access to assets), self-organization (e.g. social networks, local institutions), and learning (e.g. knowledge of threats and opportunities)
- 2. Decreasing vulnerability of farming communities to external shocks**, with 6 main threats identified with upland communities: 2 related to climatic events (droughts and floods), 2 related to production losses (pest damages on crops and livestock diseases), and 2 related to the market risks (price fluctuations and contract breaking)
- 3. Eco-friendly intensification of agriculture at village landscape level**: as both livelihoods and vulnerabilities depend on farming systems, 5 dimensions of sustainable agricultural intensification have been prioritized for intervention: crop-livestock integration, market stabilization, agricultural diversification, land use intensification, and improvement of technical performances.

Engaging farming communities into the design and implementation of climate-resilient agricultural systems



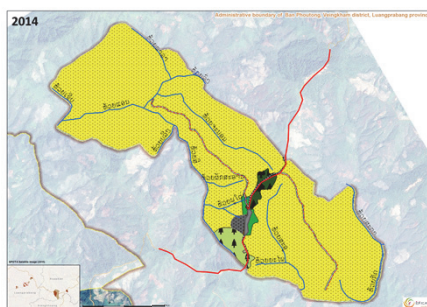
Based on existing or revised Land Use Plans (LUP), farming communities are engaged into the design and implementation of Community-based Agricultural Development Plans (CADPs).

1. The different activities at village landscape level are discussed and negotiated with farmers

- legume crops (e.g. pigeon pea, rice bean) contribute both to the diversification of agricultural income (e.g. stick lac production on pigeon pea stems) and the maintenance of agricultural land productivity (soil enrichment in nitrogen, soil organic matter improvement, better weed control, etc.) unless roaming animals damage legume crops whose cycle are longer than those of traditional upland rice and maize crops,
- livestock can be maintained in dedicated livestock areas if these areas are permanently fenced and if additional fodder resources and sufficient water are made available. Livestock manure can contribute to improved agricultural productivity unless animal stalls are built to concentrate animal dejections and facilitate its collection,

2. Clear development goals are set through broad consultation of stakeholders including definition of indicators of achievement and responsibility sharing

The case of Pouthong village, Viengkham district, Luang Prabang province is proposed as an illustration of CADP iterative process and impact pathway towards more climate resilient agricultural systems.



2014. Before village intervention, almost 90% of village territory dedicated to rotational upland crops cultivation



2015. PLUP and CADP processes with local agencies (DAFO, MALaM, DoNRE) and partner institutions (CIRAD, Agrisud, AFD, EU); delineation of livestock areas; farmer trainings conducted with 50 households and on-farm experiments (6,2 ha). Participatory assessment of forage technologies; sensitization of villagers, training of 3 village veterinary workers, and animal health fund establishment for improved animal health practices



2016. a collective forage plot maintained as seed bank for further expansion; 3 livestock areas covering 29 ha permanently fenced, 14 ha of improved pasture planted, animal stalls and water tanks built for goats; training and support to vegetable production (7 HHs); manure is transformed into compost for vegetable production



2017. further expansion of improved pastures and animal housing facilities; on-farm experiments on cereals (maize, rice, or job's tears) intercropped with legume crops (rice bean, pigeon pea); training on the use of secondary crops (integration into human diet, stick lac production); value chain development and maintenance of crop seed banks (improved storage practices to reduce pest damages).

CONCLUSIONS

Landscape approaches emphasize adaptive management, stakeholder involvement, and multiple objectives. Negotiating at village landscape level the integration of farm and non-farm (e.g. natural resources preservation) development strategies leads to greater impacts on livelihoods, ecosystem services and resilience to climate change.

